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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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10/604,062

06/24/2003

SIMON G. FLEURY

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06/20/2006

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EXAMINER

JACOB, MARY C

ART UNIT

PAPER NUMBER

2123

DATE MAILED: 06/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | | |
|------------------------------|------------------------|--|---------------------|--|
| Office Action Summary | Application No. | | Applicant(s) | |
| | 10/604,062 | | FLEURY ET AL. | |
| | Examiner | | Art Unit | |
| | Mary C. Jacob | | 2123 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>6/26/03, 6/14/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-36 have been presented for examination.

IDS

2. With regard to the IDS filed 6/14/04, document number 1 417 553 was not supplied to the examiner, therefore, it was not reviewed. A copy of this document is requested with the reply to this office action.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 900, 1100. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 17 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Claims 17 and 18 recite the limitation "the plane". There is insufficient antecedent basis for this limitation in the claim. The claims, as written, are dependent on claims 1 and 11, however, there is no mention of "the plane" in either of these claims.

Claim Interpretation

7. Claims 17 and 18 recite the limitation "the plane", however, there is no mention of "the plane" in either claims 1 and 11, making it unclear as to what "the plane" refers to. It was determined that it may have been intended to have claims 17 and 18 depend on claim 16 instead of claim 11, therefore, the claims were treated to depend on claim 16, instead of claim 11.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-8, 11-12, 19-26, 29-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Plumb et al (U.S. Patent 6,078,867).

10. As to Claims 1 and 19, Plumb et al teaches: a method for displaying a plurality of measurement data along a borehole trajectory, comprising: displaying a borehole model representing the borehole trajectory (Figure 2; column 4, lines 17-30, 40-44); and displaying the plurality of measurement data as at least one layer overlaying the borehole model (column 2, lines 20-22; column 4, lines 45-50), wherein the plurality of measurement data are displayed at measurement depths corresponding to measurement depths of the borehole model (Figure 2; column 4, lines 7-9); a display, computer and computer program (column 3, lines 2-17).

11. As to Claims 2 and 20, Plumb et al teaches: the borehole model has a diameter related to a borehole diameter determined with a tool (column 4, lines 30-34).

12. As to Claims 3 and 21, Plumb et al teaches: mapping measurement data on a surface of the borehole model (column 4, lines 45-50).

13. As to Claims 4 and 22, Plumb et al teaches: wherein the at least one layer comprises at least two layers displayed with different diameters (column 2, lines 25-30; column 5, lines 5-17).

14. As to Claims 5 and 23, Plumb et al teaches: wherein the different diameters represent different depths of investigation (column 4, lines 30-37, 40-42).

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15. As to Claims 6 and 24, Plumb et al teaches: the at least one layer is displayed in different transparency (column 5, lines 5-21).

16. As to Claims 7 and 25, Plumb et al teaches: wherein the different transparency is set according to a selected function (column 3, lines 38-43).

17. As to Claims 8 and 26, Plumb et al teaches: wherein the selected function is dependent on measurement values in the plurality of measurement data (column 4, lines 48-50).

18. As to Claims 11, 12, 29 and 30 Plumb et al teaches: wherein the plurality of measurement data comprise well logging data, the well logging data comprise at least one selected from the group consisting of resistivity data, neutron measurement data, gamma ray measurement data, nuclear magnetic resonance data, and acoustic measurement data (column 3, lines 18-23; column 4, line 50).

Claim Rejections - 35 USC § 103

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

20. Claims 9, 10, 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Plumb et al as applied to claims 1 and 19 above, and further in view of Austin et al ("Application of 3D Visualization Software to Reservoir Simulation Post-Processing", SPE 24433, 1992).

21. As to Claims 9, 10, 27 and 28, Plumb et al teaches displaying a plurality of measurement data along a borehole trajectory to support borehole failure mode analysis by a user (column 1, lines 50-59).

22. Plumb et al does not expressly displaying a measurement value associated with a cursor location, wherein the cursor location is user selected.

23. Austin et al teaches the use of a state of the art 3D visualization software used in reservoir simulation studies that employs the ability to transform vast amounts of simulation results into easily understood 3D images to help in data checking and understanding of the reservoir processes (Abstract) wherein a measurement value is displayed associated with a cursor location, wherein the cursor location is user selected (page 2, column 2, "Procedures", paragraph 6).

24. Plumb et al and Austin et al are analogous art since they are both directed to the 3D visual display of measurement data obtained for geological structures.

25. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the displaying of measurement data as taught in Plumb et al to include displaying a measurement value associated with a cursor location, wherein the cursor location is user selected as taught by Austin et al since Austin et al teaches a state of the art software tool that provides the ability to transform vast amounts of simulation results into easily understood 3D images to help in data checking and understanding of the reservoir processes (Abstract).

26. Claims 13-15, 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Plumb et al as applied to claims 1 and 19 above, and further in view of Rice (U.S. Patent 4,467,461).

27. As to Claims 13-15, 31-33, Plumb et al teaches displaying a plurality of measurement data along a borehole trajectory to support borehole failure mode analysis by a user (column 1, lines 50-59).

28. Plumb et al does not expressly teach selectively displaying a portion of the borehole model and the at least one layer by removing an angular section of the borehole model and the at least one layer; wherein the angular section is reference to a user coordinate; wherein the borehole model and the at least one layer are displayed in a cross-section view.

29. Rice teaches improvements in color presentation of selected geophysical data values by creating a final output display having greater informational content for the interpreting geophysicist wherein the operator can change the output display both

dynamically and interactively (column 1, lines 35-38, 62-66). Rice discloses a three dimensional cut (Figure 13) and teaches that it is common practice today to run a plurality of parallel lines of survey which digital signal processing then enables to be placed in a three dimensional relationship and output with any selected angular cut or cross-section (column 7, lines 35-51).

30. Plumb et al and Rice are analogous art since they are both directed to the three dimensional display of geophysical data.

31. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the displaying of measurement data as taught in Plumb et al to display the results of measurement data with a selected angular cut or cross section as taught in Rice since Rice teaches improvements in color presentation of selected geophysical data values by creating a final output display having greater informational content for the interpreting geophysicist wherein the operator can change the output display both dynamically and interactively (column 1, lines 35-38, 62-66) and further teaches that it is common practice in the art to output results with a selected angular cut or cross-section.

32. Claims 16-18, 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Plumb et al as applied to claims 1 and 19 above and further in view of Bryant et al ("Reservoir Description for Optimal Placement of Horizontal Wells", SPE 35521, 1996).

33. As to Claims 16-18, 34-36, Plumb et al teaches displaying a plurality of measurement data along a borehole trajectory to support borehole failure mode

analysis by a user (column 1, lines 50-59) and further teaches inserting dip values at depths where dips were measured (column 5, lines 42-45).

34. Plumb et al does not expressly teach enabling the display of a plane intercepting the borehole model wherein the plane is a dip plane and adjusting the plane to fit a pattern of measurement values.

35. Bryant et al teaches a modeling and visualization tool that enables rapid updating of prior 3-D geological models with logging while drilling data to make local adjustments to dip and displacement of geological surfaces which maximizes the utilization of logging while drilling data and prior models to support real-time drilling decisions that are required to optimize horizontal well placement (Abstract). Bryant et al teaches a plane wherein the plane is a dip plane and adjusting the plane to fit a pattern of measurement values used to create a 3-D model of a geological surface (pages 302-303, "Calculation Method"; Figure 3).

36. Plumb et al and Bryant et al are analogous art since they are both directed to creating three-dimensional models from geological data.

37. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the displaying of dip values as taught by Plumb et al to include the display of a plane intercepting the borehole model wherein the plane is a dip plane and adjusting the plane to fit a pattern of measurement values as taught by Bryant et al since Bryant et al teaches a modeling and visualization tool that enables rapid updating of prior 3-D geological models with logging while drilling data to make local adjustments to dip and displacement of geological surfaces which maximizes the

utilization of logging while drilling data and prior models to support real-time drilling decisions that are required to optimize horizontal well placement (Abstract).

Conclusion

38. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

39. Matsumoto et al ("A Computer Aided Reservoir Engineering (CARE) System: From XY Plots to 3D Animations", OSEA 88184, 1988), teaches a graphic post-processing system that shows the distribution of parameters of reservoir simulations using colored-transparent iso-value surfaces in a 3-D space.

40. Janpieter ("Analysis and Modeling of Fractured Reservoirs" SPE 50570, 1998) teaches discusses methodologies to perform structural modeling of fractured reservoirs.

41. Sanstrom (US Patent 6,801,197) teaches drilling learning through visualization.

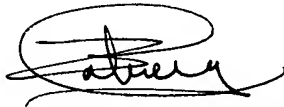
42. Knobloch (US Patent 6,950,751) teaches displaying geological features using hue, saturation and intensity to represent different values of geological features characteristics.

43. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mary C. Jacob whose telephone number is 571-272-6249. The examiner can normally be reached on M-F 7AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez can be reached on 571-272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



PRIMARY EXAMINER

6/12/06

Mary C. Jacob
Examiner
AU2123

MCJ
6/9/06